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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,302	03/24/2004	Satoshi Masumi	08830.0016	3817
22852 7590 05/16/2007 FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			EXAMINER LIANG, LEONARD S	
			ART UNIT 2853	PAPER NUMBER
			MAIL DATE 05/16/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/807,302

Applicant(s)

MASUMI ET AL.

Examiner

Leonard S. Liang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 April 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11, 13-17, 22, 24-26, 28-39, 41 and 42 is/are pending in the application.
- 4a) Of the above claim(s) 1-11, 13-17, 22 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25-26, 28-39, and 41-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

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**DETAILED ACTION*****Claim Objections***

Claim 40 is objected to because of the following informalities: There is no claim 40 listed. For purposes of examination, the examiner will assume that claim 40 is cancelled. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

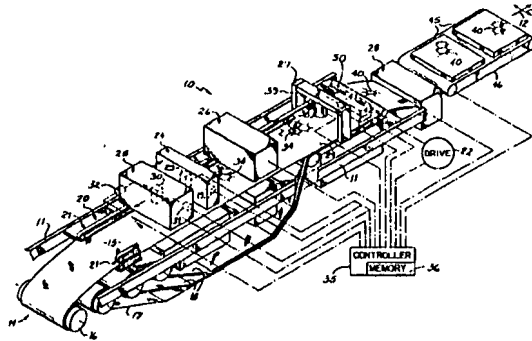
Claims 25-26 and 28-39, and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Codos et al (US Pat 6312123) in view of Muranaka (US Pat 6004052) and Wile et al (US Pat 4517893).

Codos et al discloses:

- {claim 25} An image recording device (fig 1); a recording head which discharges an ultraviolet-ray curable ink, which is cured as irradiated with ultraviolet rays (figure 1, reference 25); an ultraviolet light source which generates ultraviolet rays to cure the ultraviolet-ray curable ink (figure 1, reference 24); a first heating section which heats the ultraviolet-ray curable ink on a recording medium after an irradiation of the ultraviolet rays (figure 1, reference 26); a pressure section which pressurizes the

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recording medium after an irradiation of the ultraviolet rays (reference 44 in column 4, lines 17-20)



- {claim 36} a moving section which moves the recording medium relative to the first heating section (figure 1, reference 20; column 3, line 56-column 4, line 5)
- {claim 41} wherein the ultraviolet-ray curable ink is a water-base ink (column 1, lines 55-56)

Codos et al differs from the claimed invention in that it does not explicitly disclose:

- {claim 25} a second heating section which heats the recording medium before a heating process of the first heating section; a controller which controls the first heating section to start heating the ultraviolet-ray curable ink on the recording medium after the last discharge of the ink to an arbitrary area on the recording medium, a first predetermined time between the last discharge and the starting heat is predetermined, and controls the first heating section to heat the ultraviolet-ray curable ink within a second predetermined time in a range between 0.1 and 10 seconds

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- {claim 26} wherein the first predetermined time is in a range between 0.1 and 120 seconds
- {claim 28} wherein the controller changes a heat quantity, which is applied to the ink by the heating section, in accordance with kinds of recording medium to be recorded
- {claim 29} wherein the controller changes the second predetermined time in accordance with kinds of recording medium to be recorded
- {claim 30} wherein the controller changes the first predetermined time in accordance with kinds of recording medium to be recorded
- {claim 31} wherein the controller changes a heat quantity, which is applied to the ink by the heating section, in accordance with recording conditions
- {claim 32} wherein the controller changes the second predetermined time in accordance with recording conditions
- {claim 33} wherein the controller changes the first predetermined time in accordance with recording conditions
- {claim 34} wherein the heating section is used as the pressure section
- {claim 35} wherein a heating process of the heating section and a pressurize process of the pressure section are overlapped
- {claim 37} a pair of rollers which moves the recording medium to the first heating section, wherein one of the rollers is used as the heating section, and the other is used as the pressure section
- {claim 38} a roller and a belt which move the recording medium to the first heating section, wherein one of the roller and the belt is used as the heating section, and the other is used as the pressure section

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- {claim 39} a pair of belts which moves the recording medium to the first heating section, wherein one of the belts is used as the heating section, and the other is used as the pressure section
- {claim 42} wherein the second heating section heats the recording medium before a recording process of the recording head

Codos et al discloses:

- {claims 25-26 and 28-33) a controller (fig 1, ref 35) which includes a memory for storing programmed patterns, machine control programs and real time data regarding the nature and longitudinal and transverse location of printed designs on a web and the relative longitudinal position of the web (column 4, lines 44-52) and which can be used to control heating and curing of substrates of different thicknesses so that ink on the substrate is maintained at about 300° F for up to three minutes and the heating ranges from 30 seconds to 3 minutes to make sure ink adequately penetrates the depths of the substrate (column 5, lines 15-34)

Muranaka discloses:

- {claim 25} a second heating section which heats the recording medium before a heating process of the first heating section (figure 5, reference 2-3, 27, and 29; column 7, lines 12-18)

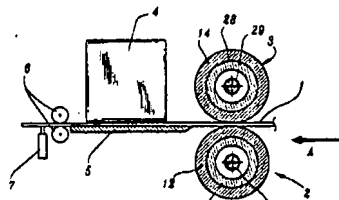


FIG. 5

- {claim 37} a pair of rollers which moves the recording medium to the first heating section, wherein one of the rollers is used as the heating

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section, and the other is used as the pressure section (figure 5, reference 2-3, 27-29)

- {claim 38} a roller and a belt which move the recording medium to the first heating section, wherein one of the roller and the belt is used as the heating section, and the other is used as the pressure section (naturally suggested in view of figure 5 and column 2, lines 7-12, which teaches the possible use of belt)
- {claim 39} a pair of belts which moves the recording medium to the first heating section, wherein one of the belts is used as the heating section, and the other is used as the pressure section (naturally suggested in view of figure 5 and column 2, lines 7-13)
- {claim 42} wherein the second heating section heats the recording medium before a recording process of the recording head (figure 5)

Wile et al discloses

- {claim 25} wherein the second predetermined time is in a range between 0.1 and 10 seconds (column 9, lines 41-47)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the control system of Codos et al. The motivation for the skilled artisan in doing so is to gain the benefit of controlling the various elements of the printing system. The combination naturally suggests:

- {claim 25} a controller which controls the first heating section to start heating the ultraviolet-ray curable ink on the recording medium after the last discharge of the ink to an arbitrary area on the recording medium, a first predetermined time between the last discharge and the starting heat is

predetermined, and controls the first heating section to heat the ultraviolet-ray curable ink within a second predetermined time

- {claim 26} wherein the first predetermined time is in a range between 0.1 and 120 seconds (because of proximity of heat station to print station)
- {claim 28} wherein the controller changes a heat quantity, which is applied to the ink by the heating section, in accordance with kinds of recording medium to be recorded
- {claim 29} wherein the controller changes the second predetermined time in accordance with kinds of recording medium to be recorded
- {claim 30} wherein the controller changes the first predetermined time in accordance with kinds of recording medium to be recorded
- {claim 31} wherein the controller changes a heat quantity, which is applied to the ink by the heating section, in accordance with recording conditions
- {claim 32} wherein the controller changes the second predetermined time in accordance with recording conditions
- {claim 33} wherein the controller changes the first predetermined time in accordance with recording conditions

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Muranaka into the invention of Codos et al. The motivation for the skilled artisan in doing so is to gain the benefit of removing moisture from the substrate before printing in order to reduce wrinkling or curving of the substrate. The combination naturally suggests:

- {claim 34} wherein the first heating section is used as the pressure section (because even though figure 5 in Muranaka shows the pressure section



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coming before printing, Muranaka also stands for the general principle that heating rollers can be used for drying and can thus also replace the current first heater shown in Codos et al)

- {claim 35} wherein a heating process of the first heating section and a pressurize process of the pressure section are overlapped

It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the regular ink of Codos et al with the plastisol ink of Wile et al in order to achieve drying times in a range between 0.1 and 10 seconds. The motivation for the skilled artisan in doing so is to gain the benefit of maintaining image quality on fabric despite multiple washing cycles.

### ***Response to Arguments***

Applicant's arguments with respect to claims 25-26 and 28-39, and 41-42 have been considered but are moot in view of the new ground(s) of rejection.

This action is made non-final to remedy the previous action, which was improperly made final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S. Liang whose telephone number is (571) 272-2148. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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**STEPHEN MEIER**  
**SUPERVISORY PATENT EXAMINER**